4. (Amended) A sample temperature regulator comprising:

a heating block having a receptacle formed therein as a sample container holder, said heating block attaching a temperature-controllable heater; and

a cooling block having a cooling mechanism; the heating block and the cooling block being combined directly with each other;

wherein the cooling block is made of a material having a thermal conductivity lower than that of the heating block.

5. (Amended) The sample temperature regulator according to claim 4, wherein the cooling block extends between and connects with a plurality of heating blocks.

6. (Amended) The sample temperature regulator according to claim 4 or 5, further comprising a refluxing block extending between said cooling block, and containing means for contacting an upper part of a sample container.

REMARKS

Claims 1 to 6 are in the application and stand rejected under 35 U.S.C. §102(b) over Potter, et al. or, alternatively, under 35 U.S.C. §103(a) over Potter, et al. taken in view of Dunges and any one of Dutertre, et al., Seiko or Picozza, et al. The claims in the application are furthermore made subject to an election of species between a first species of Figures 1 to 3; a second species of Figure 4; a third species of Figure 5; a fourth species of Figure 6; a fifth species of Figures 7 to 9; a sixth species of Figure 10, a seventh species of Figures 11 and 12; and a perceived indeterminant number of additional species described, but not illustrated in the application, said to be embodying combinations of features of the aforementioned several species.

Going first to the election of species, Applicant respectfully requests reconsideration of the election requirement as presented in the Office Action for the reason that a fair reading of the claims in the application lead to the conclusion that only two principal species of the invention are claimed in the patent application. The first species involves a sample temperature regulator in which a connecting plate 15 formed of a material having a thermal conductivity lower than those of the two blocks is interposed between the heating block 3 and the cooling block 4. This species is represented by the showings in all of Figures 1 to 10 and is covered by claims 1 to 3 in the application.

A second species is represented by the embodiments illustrated in Figures 11 and 12 and involves a sample temperature regulator in which the cooling block 3 is combined directly with the heating block 4 but is formed of a material having a thermal conductivity lower than that of the heating block. This second species is covered by claims 4 to 6 in the application.

In order to comply with the provisions of 37 C.F.R. §1.142, election is hereby made with traverse to prosecute the first species containing claims 1 to 3 and that are readable on all of Figures 1 to 10 in the application.

In response to the rejection made in the Office Action based upon Potter, et al. alone, claims 1 to 6 are amended to specifically recite that the heating block 3, which attaches a temperature controllable heater 10, contains a receptacle or holding hole 6 for holding the sample container. Claims 1 to 3 further require that the heating block 4 is connected to the cooling block via a connecting plate 15 that is made of a material having a thermal conductivity lower than the respective heating and cooling blocks.

Claims 4 to 6, on the other hand, require the heating block 3 to be combined directly with the

cooling block 4 and that the cooling block be made of a material whose thermal conductivity is lower than that of the heating blocks.

The claims as amended all structurally define over the device embodied in Potter, et al. in which there is no heating block having a receptacle or holding hole for receiving a sample container. The deficiency in Potter, et al. as an anticipating reference is not cured by any of the patents to Dunges, Dutertre, et al., Seiko or Picozza, et al., because none of these references disclose the sample container-receiving heating block attaching a temperature-controllable heater 10 as required by the claims.

For the foregoing reasons therefore it is submitted that all of the claims in the application distinguish over the references, as applied in the Office Action, and, consequently, should be allowed.

At the same time the Examiner's election requirement is respectfully traversed either in whole or in part because there are clearly not seven or more separate species reflected in the claims as indicated in the Office Action but, at best, not more than two individual species. Moreover, it is respectfully submitted that the species disclosed in this application do not significantly differ from each other. In connection with this, the Examiner's attention is respectfully directed to the Commissioner's decisions in the case of In re Joyce and In re Herrick, et al., decided September 17, 1957, and reported in 727 O.G. 1. These decisions seem to be applicable to the present case and it is therefore respectfully requested that the Examiner permit prosecution of multiple species in this application, which do not significantly differentiate over each other - even if no single generic claim is finally held allowable.

Should the Examiner, however, make final his decision to prosecute further only the single elected species, it is respectfully submitted that, in the event a generic claim is finally held allowable, that allowance of the claims related to the non-elected species, as well, be permitted in this application.

Pursuant to the Examiner's request, enclosed herewith are copies of English language translations of relevant portions of Japanese language documents JP06-335633, JP08-117590 and JP10-275582.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached hereto is a marked-up version of the changes made to the by the current amendment. The attached page is captioned "**Version with markings to show changes made**."

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

H:\FLOATERS\JFC\01\010919\amendment

VERSION WITH MARKINGS TO SHOW CHANGES MADE 09/869,325

IN THE SPECIFICATION:

The specification was **AMENDED** as follows:

The paragraph beginning at page 5, line 6, was replaced with the following rewritten paragraph:

The sample temperature regulators according to these aspects each have a simple structure and are resistant to impacts and vibrations, durable and inexpensive, since the [hating] heating block and the cooling block are combined with each other. Even if the heating block and the cooling block are combined with each other, the connecting plate made of a material having a thermal conductivity lower than that of the heating block and that of the cooling block or the cooling block made of a material having a thermal conductivity lower than that of the heating block limits the rate of heat transfer from the heating block to the cooling block, so that the temperature of the heating block can be regulated at a predetermined preset level while the temperature of the cooling block is maintained for a long time.

IN THE CLAIMS:

The claims were **AMENDED** as follows:

1. (Amended) A sample temperature regulator comprising:

a heating block having a receptacle formed therein as a sample container holder [and], said heating block attaching a temperature-controllable heater;

a cooling block having a cooling mechanism; and

a connecting plate [for combining] positioned between and attaching the heating block [and] with the cooling block [with each other];

wherein the connecting plate is made of a material having a thermal conductivity lower than those of these two blocks.

2. (Amended) The sample temperature regulator according to claim 1, wherein the cooling block [is combined with] extends between and connects with a plurality of heating blocks.

3. (Amended) The sample temperature regulator according to claim 1 or 2, further comprising a refluxing block extending from said cooling block, and containing means [which is brought into contact with] for contacting an upper part of a sample container seated in said heating block.

4. (Amended) A sample temperature regulator comprising:

a heating block having a receptacle formed therein as a sample container holder [and], said heating block attaching a temperature-controllable heater; and

a cooling block having a cooling mechanism; the heating block and the cooling block being combined directly with each other;

wherein the cooling block is made of a material having a thermal conductivity lower than that of the heating block.

5. (Amended) The sample temperature regulator according to claim 4, wherein the cooling block [is combined with] extends between and connects with a plurality of heating blocks.

6. (Amended) The sample temperature regulator according to claim 4 or 5, further comprising a refluxing block [which is brought into contact with] extending between said cooling block, and containing means for contacting an upper part of a sample container.

JP Kokai No. 06-335633

[Title of the invention] ELEMENT COOLING AND HEATING TESTING DEVICE

Paragraph relevant to page 2, left column, lines 45 to 46.

[0007]

Therefore, the present invention provides a solution for a technical problem to reduce the heat transfer quantity from a heater to a cold head when a sample is heated.

Paragraphs relevant to page 2, right column, lines 31 to 49.

[0014]

The cold head 12 of the cryogenic refrigerator 11 has a cooling block (first member) 18 thermally connected onto the upper surface thereof through bolts (not shown) and the like. The view A of the cooling block 18 in Fig. 1 is shown in Fig. 2. As shown in Fig. 2, the cooling block 18 has in its lower position a refrigerant passage 19 through which a refrigerant such as liquid nitrogen flows, and a plurality of holes 20 defined above the refrigerant passage 19, in which rod heaters (not shown) are to be embedded. Here, the holes 20 may not be defined. Further, the cooling block 18 has four bolt inserting holes 21 in which the bolts and the like are to be inserted and also has a through hole 22 defined as a light passage substantially at the center.

[0015]

The cooling block 18 has a heating block (second member) 23 thermally connected to the left surface thereof (see Fig. 1). The heating block 23 has a plurality of rod heaters 24 embedded therein. Here, electric power is

adapted to be supplied to each rod heater 24. The heating block 23 has a specimen stage 25 formed on the left surface thereof (see Fig. 1), on which a specimen 26 is to be mounted through bolts (not shown). The view B of the heating block 23 in Fig. 1 is shown in Fig. 3. As shown in Fig. 3, the heating block 23 has a plurality of heater inserting holes 27 defined therein, in which the rod heaters 24 are to be embedded. Further, the heating block 23 has four bolt inserting holes 28 defined in the corners thereof respectively, in which the bolts and the like are to be inserted, such that they are aligned with the bolt inserting holes 21 of the cooling block 18 respectively. Further, a through hole 29 is defined as a light passage substantially at the center of the cooling block 18 to be in alignment with the through hole 22 of the cooling block 18.

Paragraph relevant to page 3, left column, lines 37 to 48.
[0020]

While the heat of the rod heaters 24 is transferred from the heating block 23 to the cold head 12 of the refrigerator 11 through the cooling block 18, a wide opening recess 30 is formed on the left surface of the cooling block 18 to notably reduce the contact area between the heating block 24 and the cooling block 18. As a result, the recess 30 makes it difficult to transfer the heat of the rod heaters 24 to the cold head 12 through the cooling block 18. Thus, the quantity of heat to be transferred from the rod heaters 24 to the cold head 12 reduces compared with the prior art, so that the cold head 12 is hardly affected by the temperature of the specimen 26 if heated to a high temperature region (e.g., ca. 300°C). Therefore, the quantity of heat to be transferred from the

cold head 12 to the piston ring 17 through the cylinder 13 reduces to prevent deterioration of sealing property of the piston ring 17.

JP Kokai No. 08-117590

[Title of the invention] TEMPERATURE CYCLE APPARATUS

Paragraphs relevant to page 2, right column, line 37 to page 3, left column, line 18.

[0004]

[Problems to be Solved by the Invention]

However, in the conventional apparatus, specimens are heated and cooled by changing the direction of electric current to be applied to the thermo module. Therefore, temperature changes when heating is changed over to cooling and vice versa do not take place quickly due to the thermal capacities of the heating block and the thermo module themselves, limiting improvement of the efficiency of proliferation reactions.

[0005]

Under such circumstances, there has been developed an apparatus, in which a reaction vessel containing specimens are heated or cooled with heating means or cooling means, which are prepared beforehand, to effect a temperature change quickly from a low temperature to a high temperature or vice versa. However, in this apparatus, the reaction vessel cannot be maintained at a predetermined temperature unless either the heating means or the cooling means is constantly brought into contact therewith, so that the effect of thermal storage or cool storage prevents rapid heating or cooling of the reaction vessel when it is heated gradually in the heating step or is cooled gradually in the cooling step. Further, when a cycle of temperature rise and temperature drop is repeated, the heating means and the cooling means can carry out rapidly heating and cooling due to the thermal storage effect and cool storage effect

thereof, respectively. However, in the state where the heating means or the cooling means is brought into contact with the reaction vessel, the thermal capacity increases to be likely to bring about a great overshoot as compared to a target temperature value. In order to reduce the overshoot, the rate of temperature change must be reduced much earlier before the target temperature value is attained. Further, since the temperature of the reaction vessel is controlled by contact with either the heating means or the cooling means, the temperature distribution in the reaction vessel is susceptible to changes of the contact state not only in the temperature transition period but also in the stable period, disadvantageously.

[0006]

The present invention is directed to solving the problems described above and to providing a temperature cycle apparatus which quickly changes temperature in a reaction block holding reaction specimens and which has reduced variation in temperature distribution in the stable period and a reduced overshoot in the transition period.

JP Kokai No. 10-275582

[Title of the invention] SPECIMEN HEATING AND COOLING DEVICE OF ELECTRONIC MICROSCOPE OR THE LIKE

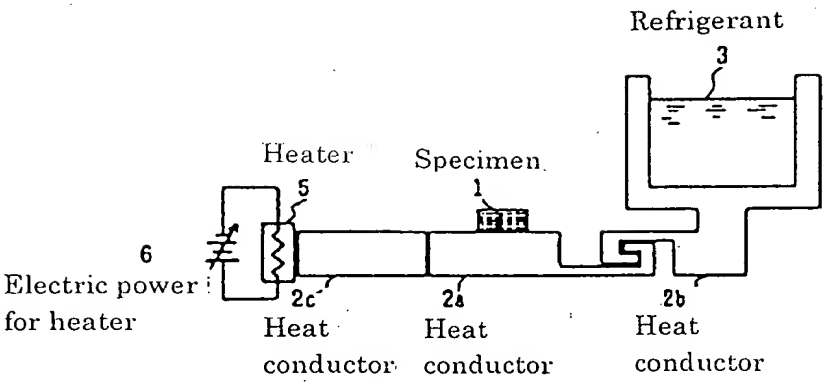
Paragraph relevant to page 2, left column, lines 30 to 36.

[0003]

[Problems to be Solved by the Invention]

In an apparatus for carrying out microscopic observation such as an electron microscope, the observation area moves unless the temperature of a specimen and around it is stabilized, to inhibit accurate observation. In an example shown in Fig. 3, it is essential that the specimen 1 be thermally insulated from the outside so that the specimen 1 can be heated efficiently and stably. However, the specimen 1 is not thermally insulated but is connected to the heat conductor 2 for cooling and the refrigerant 3. On the other hand, in order to cool the specimen 1 efficiently and stably, thermal contact between the specimen 1 and the heat conductor 2 must be improved. Therefore, it has been difficult to carry out heating and cooling of a specimen 1 efficiently and stably using a single apparatus without changing the constitution thereof.

Fig.2


Refrigerant
3
Heater
5
Specimen
1
6
Electric power
for heater
2c
2a
2b
Heat
conductor
Heat
conductor
Heat
conductor